

NATIONAL DEFENSE UNIVERSITY

NATIONAL WAR COLLEGE

**NATIONAL MISSILE DEFENSE: RESPONSIBLE NATIONAL SECURITY
STRATEGY OR THE FINAL THROES OF COLD WAR MENTALITY?**

COL JOHN A. KARDOS
COURSE 5605
DOING MILITARY STRATEGY
SEMINAR C

PROFESSOR
COL JOHN H. McDONALD

ADVISOR
LTC (P) ROBERT M. TOGUCHI

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2002		2. REPORT TYPE		3. DATES COVERED 00-00-2002 to 00-00-2002	
4. TITLE AND SUBTITLE National Missile Defense: Responsible National Security Strategy or the Final Throes of Cold War Mentality?				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National War College, 300 5th Avenue, Fort Lesley J. McNair, Washington, DC, 20319-6000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 15	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

NATIONAL MISSILE DEFENSE: RESPONSIBLE NATIONAL SECURITY STRATEGY OR THE FINAL THROES OF COLD WAR MENTALITY?

In a matter of minutes on September 11, 2001, the strategic environment for the United States changed significantly and permanently. After the initial reactions of shock, compassion, and patriotism, Congress and the American public began to ask the hard questions. They wanted to know why the most powerful and technologically advanced nation in history had failed to detect and protect itself from this new threat. It is not within the scope of this paper to answer all of those questions. Rather, it will critically analyze whether the development of a national missile defense system is the best use of our national resources to protect the territory of the United States and the lives of our citizens.

National Security Strategy Development

The national security interests of the United States would be better served by shifting the resources currently allocated for developing a National Missile Defense (NMD) system to more crucial programs. On the face of it, possessing the capability to defend the country from missile attack seems like a logical, responsible decision. However, as will be outlined below, NMD development fails to optimize the investment of time, money, and other resources because the system: (1) does not effectively counter the most likely and dangerous threats to the United States, (2) faces significant technological challenges, (3) is very expensive, and (4) creates significant anxiety among both allies and adversaries that could itself serve as a source of instability. While the horrific nature of the terrorist attacks led to bipartisan support for significant defense budget growth in FY 2002, we must expect that economic and political realities will quickly limit further increases. Therefore, the nation's civilian and military leadership must decide which capabilities are most feasible, effective, and appropriate for protecting our vital national interests.

United States Ballistic Missile Defense Programs

Ballistic missile defense capabilities fall under two main categories: theater air and missile defenses (TAMD) and national missile defense for the United States. In response to increasing proliferation of weapons of mass destruction (WMD), several missile defense programs are being processed through the research and development cycle with decisions pending concerning which systems may be deployed. The TAMD programs are further along in development and include lower-tiered systems such as the Army PAC-3 and the Navy area defense system, and upper-tier systems such as the Army theater high-altitude (THAAD) system, the Navy theater-wide system, and the Air Force airborne laser for boost-phase intercept. Initial production of the PAC-3 and the Navy area defense are already underway and the THAAD is entering the manufacturing stage with initial deployment expected in 2007.¹

The development of a NMD system has been much more politically charged and slower to develop. President Reagan's 1983 announcement of the Strategic Defense Initiative (SDI) marked the beginning of the first significant effort to develop a NMD system. Tired of the seemingly unending race with the Soviet Union to build greater numbers of more powerful nuclear weapons, Reagan sought a way to decrease their relevance. When the demise of the Soviet Union reduced the likelihood of a massive nuclear attack, President George H. W. Bush directed in 1991 the development of the Global Protection Against Limited Strikes (GPALS) program. This system was designed to protect the United States from missile attacks by rogue states or accidental launches from Russia or China. President Clinton took a more conservative approach to national missile defense, canceling the GPALS program in 1993 and replacing it with his "3+3" plan in 1995. This

¹Paraphrased from Richard L. Kugler, "The Defense Budget: Meeting Growing Requirements with Constrained Resources," *QDR 2001; Strategy-Driven Choices for America's Security*, Ed. Michele A. Flourney, National Defense University Press, Washington, D.C., 2001, p. 130.

effort called for three more years of research before making a decision, followed by another three years of development.²

President George W. Bush has made National Missile Defense (NMD) a centerpiece of his national security strategy, embarking on experimental anti-missile programs, including land- and sea-based interceptors, airborne lasers, and space-based weapons.³ This integrated system of interceptors would be designed to destroy individual or small numbers of missiles launched by a rogue nation (such as North Korea or Iraq), terrorists or an accidental launch by a major state actor (Russia or China). In December 2001, the Bush administration further demonstrated its intent to pursue a NMD system when it informed Russia that it was withdrawing from the Anti-Ballistic Missile (ABM) Treaty of 1972, thus removing by June 2002 long-standing constraints to missile defense efforts. President Bush's goal is to have at least a rudimentary system in place by late 2004.⁴ As stated earlier, possessing the capability to defend the country from missile attack seems like a logical, responsible decision. Unfortunately, development of an effective integrated system will require considerable investment, while providing limited protection from our most likely and dangerous threats.

Threats to the United States

The United States has no peer competitor in terms of economic strength or conventional military power. However, the very freedoms and strengths that make the United States the envy of

² Paraphrased from James H. Anderson, *America at Risk: The Citizen's Guide to Missile Defense*. The Heritage Foundation, Washington, D.C., 1999, pp. 39-41.

³ An interesting note is that Donald Rumsfeld, the former and current Secretary of Defense, headed the congressionally sponsored Commission to Assess the Ballistic Missile Threat to the United States (July 1998) which stated that the ballistic missile threat to the United States was broader, more mature, and evolving more rapidly than originally surmised and that it could emerge with little or no warning (from Elaine M. Bunn, "Strategic Nuclear Forces and National Missile Defense: Toward an Integrated Framework," *QDR 2001; Strategy-Driven Choices for America's Security*, ed. Michele A. Flourney, National Defense University Press, Washington, D.C.: 2001, p. 324).

⁴ Paraphrased from Bradley Graham, "Nuclear-Tipped Interceptors Studied," *The Washington Post*, 11 April 2002, sec A, p. 2.

people around the world make us vulnerable to a variety of potential threats in an age of increasingly asymmetric warfare. Our porous borders provide easy access to ships, aircraft, and other transportation modes from around the world every day. With current technology, trying to thoroughly inspect more than a small fraction of the sealift that enters U.S. harbors would be both time and cost prohibitive. It would bring commerce to a grinding halt with tremendous negative economic implications for the United States and the rest of the world. Similarly, we have yet to develop the means to quickly detect and destroy anthrax-tainted mail. Cyber-warfare, originating from almost anywhere in the world, can significantly disrupt our society with its dependence on computer systems to run our financial markets, defense communication and coordination links, and other key systems. National missile defense would have no deterrent or protective value against any of these growing threats.

Shortly after the September 11, 2001 attacks, proponents of the NMD program attempted to strengthen their argument by asking what would have happened if Osama bin Laden possessed a nuclear missile. However, this argument is counterintuitive, since the terrorists had just demonstrated that WMD could be delivered in commercial aircraft. This is not to suggest that we should be unconcerned about the more than 20 countries possessing ballistic or cruise missiles.⁵ As the Heritage Foundation wrote in 1999, “this danger [of a nuclear-equipped missile striking a major U.S. city] must be fully appreciated because no other threat has the potential to destroy, in the blink of an eye, lives and property on such a massive scale.”⁶ However, our future adversaries can deliver WMD more accurately, inexpensively, and anonymously with conventional transportation means than they can with a ballistic missile. This fact is at the heart of the argument that national

⁵ Anderson. p. 18.

⁶ Ibid, p. 12

missile defense is only one part, a decreasingly important part, of the effort to protect the United States from attack.

Technological Capabilities and Monetary Costs

Current estimates are that the United States will not be able to field an operational national missile defense system for at least five years and that the projected cost for deployment will run into the hundreds of billions of dollars. The technological challenges for the “hit-to kill” system that is currently being tested are significant. The interceptor missile must destroy a warhead traveling at a speed of 15,000 miles per hour, four miles per second. While moving on a collision course with its target, the interceptor must calculate a correct path, adjust its course using rocket thrusters, and score a hit in on a centimeters-wide “sweet-spot,” while distinguishing the warhead from decoys and other countermeasures.⁷ Critics have noted that although the Pentagon claims that four of six antimissile tests have hit their targets during the last five years, only a single target missile was deployed in each exercise and it was equipped with a homing beacon to guide the interceptor.⁸ A spokesman for the Defense Department’s Missile Defense Agency stated that before the system can be fully operational, at least 19 more tests must be conducted, extending the earliest operational date out to 2006 or 2007.⁹

In recent weeks, Defense Secretary Donald Rumsfeld’s actions have raised additional concerns among skeptics of the NMD program. In March, he decided to reduce internal oversight of the program in order to streamline development efforts. This worries a number of scientists and lawmakers who believe that the costly experimental program should have more supervision, not

⁷ Paraphrased from Peter Pae, “Kill Vehicle Scores a Hit With Proponents of Missile Defense,” *Los Angeles Times*, March 26, 2002, available at <http://www.latimes.com/news/nationworld/nation/la-032602kill.story>.

⁸ Paraphrased from Susan Milligan, “Critics Fault Rumsfeld for Cutting Oversight of Antimissile Plan,” *Boston Globe*, March 9, 2002, p.3.

⁹ Paraphrased from Matt Kelly, “Analysts: Missile Shield Success Just an Early Step,” *Chicago Tribune*, March 17, 2002.

less. Most recently, Rumsfeld expressed a desire to consider using nuclear-tipped interceptors in the NMD system, an idea that U.S. authorities rejected as technically problematic and politically unacceptable when it was considered thirty years ago.¹⁰ William Schneider, Jr., chairman of the Defense Science Board, believes that Rumsfeld's interest in this capability is driven by the problem of dealing with decoys and other measures that might confuse our experimental "hit-to-kill" interceptors. Further, nuclear interceptors would better ensure the complete destruction of missile-borne biological warfare agents such as anthrax. Richard L. Garwin, a senior fellow at the Council on Foreign Relations and a prominent missile defense skeptic, estimates that it would take a very powerful warhead of more than one megaton to destroy anthrax spores in bomblets spread over a distance of five kilometers or more. Such an explosion would imperil hundreds of military and civilian satellites on which our national security systems depend and destroy any sensitive electronic equipment on the ground within line-of-sight of the explosions.¹¹ This new interest in nuclear interceptors casts further doubt on the effectiveness of the current "hit-to-kill" interceptor systems in which we are making a huge investment.

Over \$60 billion has been spent on the missile defense program since the mid-1980s. This year's budget of \$7.8 billion is fifty-percent greater than last year and President Bush has asked Congress for another \$7.8 billion in 2003. It should be noted that this funding only covers research and development, not the cost of producing and deploying a system. The most recent estimates from the Congressional Budget Office are that an integrated NMD system would cost as much as \$238 billion by 2025 (ground-based interceptors \$26-74 billion through 2015, ship-launched

¹⁰ Bradley Graham, "Nuclear-Tipped Interceptors Studied," *The Washington Post*, 11 April 2002, sec A, p. 2.

¹¹ Paraphrased from Graham, p. 2.

missiles \$50-64 billion through 2015, and a space-based laser system \$82-100 billion through 2025).¹²

Political Considerations

The Bush administration's pursuit of a NMD system has been a major source of consternation both within the United States and internationally. Russia views the development of a NMD system and withdrawal from the ABM Treaty as destabilizing, since it would allow the United States to use its nuclear weapons without fearing a retaliatory strike. President Bush's answer is that the NMD system is not designed to protect against a nuclear strike from Russia, but rather from a rogue state or terrorist. He has been unmoved by Russia's threat to increase its nuclear arsenal or its suggestion to allow a limited NMD system under a modified treaty. Initially reluctant to support a missile defense program that put the nation in violation of the 1972 ABM treaty, Congressional Democrats helped approve the administration's \$8 billion request only after the 2001 terrorist attacks.¹³ Questions among Congressional leaders, our allies, and other countries persist concerning the administration's insistence on unilateral development of a NMD system, while also maintaining a significant inventory of nuclear missiles.

The threat of WMD proliferation is a very valid concern. In his testimony to the Senate Select Committee on Intelligence in February 2001, George Tenet, Director of Central Intelligence, stated "I cannot underestimate the catalytic role that foreign assistance has played in advancing these missile and WMD programs . . . The three major suppliers of [these] technologies continue to be Russia, China, and North Korea."¹⁴ He stated that Russia's cash-strapped, state-run defense and

¹² This information can be found in an article by James Dao, "Plan to Stop Missile Threat Could Cost \$238 Billion," *New York Times*, February 1, 2002.

¹³ Paraphrased from Peter Baker, "Envoy Gives Russia Target on ABM Pact," *Washington Post Foreign Service*, 22 August 2001.

¹⁴ George J. Tenet, "Worldwide Threat 2001: National Security in a Changing World," as prepared for delivery to the Senate Select Committee on Intelligence, 7 February 2001.

nuclear industries receive badly needed foreign exchange by providing the following: (1) ballistic missile-related goods to Iran, India, China, and Libya, (2) civilian Iranian nuclear programs, and (3) dual-use biotechnology, chemicals, and equipment for Iran. However, when it came to fulfilling promises of extensive foreign aid to support democracy and free markets after the fall of the Soviet Union, actual disbursements from western nations totaled only \$20 billion during 1990-95 and little has followed in subsequent years.¹⁵

While other nations should not dictate our national defense policies, we must recognize that stopping the development and proliferation of weapons of mass destruction will require the same international cooperation we actively sought for the fight against terrorism. As Haass and O’Sullivan suggest, “U.S. policymakers seeking to engage a recalcitrant regime should consult intensively with American allies; a failure to do so increases the possibility that another country will undermine the U.S. strategy by offering similar benefits without demanding any changes in behavior . . . [also] the provision of a road map obligates the United States to follow certain steps as much as it binds the target country.”¹⁶ Taking a unilateral approach to national missile defense and ignoring the concerns of allies will not help our cause.

Recommendations

Having described the challenges and shortfalls inherent in a national missile defense system, the following recommendations are made for more effectively using our limited resources to reduce the likelihood of an attack on the United States. The basic strategy calls for the timely identification, control, reduction, and, as appropriate, destruction of WMD before they can be launched against the United States or our allies.

¹⁵ *Strategic Assessment 1996; Instruments of U.S. Power*, Institute for Strategic Studies, National Defense University, 1996, p. 55.

¹⁶ Richard Haass and Meghan O’Sullivan, “Engaging Problem Countries,” *Brooking Policy Brief* 61 (June 2000): pp. 2-3.

- *Improve our intelligence gathering assets (including human intelligence and space systems) in order to better detect the development of WMD and provide early warning of any attack on the United States or our allies.* These improved capabilities are necessary for holding nations responsible for the production or proliferation of WMD and for the control or destruction of these weapons through diplomatic or military means (preferably at the source).

- *Develop a broad political agreement within the international community for reducing WMD stockpiles and limiting the spread of dual-use technology.* This effort should include reducing the nuclear stockpiles of the United States and Russia to Strategic Arms Reduction Treaty II (START II) levels on an accelerated schedule. Even if we achieve START II reductions by 2007, the United States and Russia would retain 3000-3500 accountable missiles, leaving us with many more warheads than we would need for any requirement beyond parity with Russia.¹⁷ We must also increase our assistance to Russia in dismantling their WMD and reducing the threat of proliferation. Since 1991, the Nunn-Lugar Cooperative Threat Reduction Program has appropriated only \$3 billion to assist former Soviet states in dismantling their WMD and reducing the threat of proliferation.¹⁸ We can do better than this and send a clear message to allies and adversaries of our intention to reduce global tensions and stop the proliferation of WMD.

- *Develop the means to protect the United States against other asymmetric attacks, including WMD delivered by conventional transportation assets and cyber-warfare.* This effort would include hardening our computer systems, and developing the means to detect, prevent the entry of, and dispose of weapons of mass destruction along our borders.

- *Develop the military means to destroy WMD on the ground at the source rather than after launch and state that an attack on the United States using WMD will result in a regime change.*

¹⁷ QDR 2001: Strategy-Driven Choices for America's Security, ed. Michele A. Flourney, National Defense University Press, Washington, D.C., 2001, p. 338.

¹⁸ Paraphrased from Anderson, p. 27.

The United States should also build its case for execution of a pre-emptive strike if intelligence indicates the likely use of these weapons against our homeland or that of our allies. By focusing our efforts on destroying an adversary's WMD on site, rather than after launch, we reduce the likelihood that a missile will penetrate our defenses or that nuclear, chemical or biological fallout would contaminate U.S. territory. We already have significant advantages in precision-guided weapon capabilities and should be able to develop the necessary technologies to destroy enemy WMD much more quickly than we can build a NMD system. While this strategy poses certain political challenges, the conditions we would attempt to establish are not much different than what we sought in our fight against terrorism.

- *Continue to develop our theater missile defense capabilities.* These systems are less costly, are already in production, and create fewer political problems than a NMD system. Further, they provide us with flexible deterrent value and real protection from missile attacks in both local military theaters and, as needed, to protect likely civilian targets in the United States or allied countries.

Summary

The national security interests of the United States would be better served by shifting the resources currently projected for developing a National Missile Defense system to more crucial programs. This is not to suggest that ballistic missiles do not pose a threat to the United States or that we should risk our security in response to international pressure. Rather, we must aggressively protect ourselves against the most likely and dangerous threats by shifting resources to those programs which best protect our country. We must see beyond the specter of mutually assured destruction (MAD) espoused during the Cold War and represented by current ballistic missile threats. Our potential adversaries possess a variety of asymmetric means to deliver WMD to our shores, and we must make the tough decision now to shift resources from NMD to more effective defensive programs.

BIBLIOGRAPHY

- Ambrose, Stephen E. and Douglas G. Brinkley, *Rise to Globalism*, Penguin Putnam, Inc., New York, New York, 1997.
- Anderson, James H. *America at Risk: The Citizen's Guide to Missile Defense*. The Heritage Foundation, Washington, D.C.: 1999.
- Baker, Peter. "Envoy Gives Russia Target on ABM Pact," *Washington Post Foreign Service*, 22 August 2001.
- Bunn, M. Elaine, "Strategic Nuclear Forces and National Missile Defense: Toward an Integrated Framework," *QDR 2001; Strategy-Driven Choices for America's Security*. Ed. Michele A. Flourney, National Defense University Press, Washington, D.C.: 2001.
- Corey, Brian K. *Theater Ballistic Missile Defense, an Achilles Heel for the United States?* Naval War College, Newport, Rhode Island: February 5, 1999.
- Coyle, Philip E. "Who Will Run Missile Defense?" Washington, D.C.: *The Washington Post*. December 14, 2001.
- Dao, James. "Democrats In Senate Budge On Missile Defense Money." *Associated Press*, Washington, D.C.: September 19, 2001.
- Federation of American Scientists. *National Missile Defense*. The F.A.S. Institute, 27 June 2000. Database online. Available from <http://www.fas.org/spp/starwars/program/nmd>. Internet.
- Graham, Bradley. "Nuclear-Tipped Interceptors Studied," *The Washington Post*, 11 April 2001.
- Haass, Richard and O'Sullivan, Meghan. "Engaging Problem Countries," *Brooking Policy Brief* 61 (June 2000).
- Lapidus, Gail W. "Transforming Russia: American Policy in the 1990s," *Eagle Rules? Foreign Policy and American Primacy in the Twenty-First Century*. Ed. Robert J. Lieber, Prentice Hall, Upper Saddle, New Jersey: 2002.
- Johnson, Keith. "*National Missile Defense 2015: An Unintended Consequence*." Student paper at the National War College, 2000.
- Kelly, Matt. "Analysts: Missile Shield Success Just an Early Step," *Chicago Tribune*, March 17, 2002.
- Kugler, Richard L. "The Defense Budget: Meeting Growing Requirements with Constrained Resources," *QDR 2001; Strategy-Driven Choices for America's Security*, Ed. Michele A. Flourney, National Defense University Press, Washington, D.C., 2001.
- Lehman, John F. and Harvey Sicherman, "America the Vulnerable," *America the Vulnerable: Our Military Problems and How to Fix Them*. Ed. John F. Lehman and Harvey Sicherman, Foreign Policy Research Institute, Philadelphia: 2002.

Lindsay, James M. and Michael E. O'Hanlon, *Defending America: The Case for Limited National Missile Defense*, Brookings Institution Press, Washington, D.C.: 2001.

Milligan, Susan. "Critics Fault Rumsfeld for Cutting Oversight of Antimissile Plan," *Boston Globe*, March 9, 2002.

Mitchell, Gordon R. *Strategic Deception: Rhetoric, Science, and Politics in Missile Defense Advocacy*, Michigan State University Press, East Lansing, Michigan, 2000.

Payne, Keith B. "The Case for National Missile Defense," *America the Vulnerable: Our Military Problems and How to Fix Them*, Ed. John F. Lehman and Harvey Sicherman, Foreign Policy Research Institute, Philadelphia: 2002.

Strategic Assessment 1996; Instruments of U.S. Power, Institute for National Strategic Studies, National Defense University, 1996.

Tenet, George J. "Worldwide Threat 2001: National Security in a Changing World," as prepared for delivery to the Senate Select Committee on Intelligence, 7 February 2001.

Watanabe, Nathan K. and Shannon M. Huffman, "Missile Defense Attack Operations," *Joint Forces Quarterly*, Winter 2000-01.

GLOSSARY*

Anti-Ballistic Missile (ABM) Treaty. The United States and the Soviet Union agreed that each side may only have two ABM deployment areas, so restricted and so located that they could not provide a nationwide ABM defense or become the basis for developing one. Each country thus leaves unchallenged the penetration capability of the others retaliatory missile forces. Precise quantitative and qualitative limits are imposed on the ABM systems that may be deployed. Both parties agreed to limit qualitative improvements of their ABM technology. The treaty was signed in Moscow on May 26, 1972 and entered into force on October 3, 1972. Five-year review meetings are held in Geneva. The next review conference was scheduled for 2003. However, in December 2001, the Bush administration informed the Russian government that the United States was withdrawing from the treaty effective June 2002.

Comprehensive Test Ban (CTB) Treaty. The treaty prohibits all nuclear weapon test explosions or other nuclear explosions in the world. In order to verify compliance with its provisions, the treaty establishes a global network of monitoring facilities and allows on-site inspections of suspicious events. The treaty requires the signature of 44 states possessing nuclear power and/or research reactors - including the five nuclear states (United States, Russia, United Kingdom, France, and China) and the three "threshold states" (India, Israel, and Pakistan). As of October 5, 1999, 154 states have signed and 51 states have ratified the treaty. Of the 44 states required to sign the treaty prior to formal entry into force, 41 have signed the treaty. The other three states are India, Pakistan, and North Korea.

Missile Technology Control Regime (MTCR). The MTCR was formed in 1987 by the G-7 nations (United States, United Kingdom, Canada, France, Germany, Italy, and Japan). It is a voluntary arrangement (not a binding treaty) consisting of common export policies applied to a list of missile delivery systems and related technologies for those systems capable of carrying a 500-kilogram payload at least 300 kilometers. The MTCR was originally concerned only with nuclear capable delivery systems. In January 1993, the partners extended the guidelines to cover WMD delivery systems. The MTCR considers "missiles" to include: ballistic missiles, space-launched vehicles, and sounding rockets. The MTCR now consists of 27 partner countries.

Strategic Arms Reduction Treaties (START). A series of agreements between the United States and Russia intended to reduce nuclear warheads and delivery systems.

START I. The treaty reduced deployed heavy bombers and deployed ballistic missiles to 1,600 for each side with a total of 6,000 warheads (4,900 on ballistic missiles, 1,540 on heavy missiles (SS-18), or 1,100 on mobile ICBMs). START I also placed limitations on bomber carried short-range attack missiles and air-launched cruise missiles. In addition, separate "politically binding" agreements limited sea-launched missiles with ranges above 600 kilometers to 880 for each side and the Backfire bomber to 500. START I entered into force in December 1994.

* This Glossary is taken from Keith Johnson, National War College Class of 2000, in his paper entitled "*National Missile Defense 2015: An Unintended Consequence.*" Slight changes were made to bring the document up-to-date.

START II. By December 31, 2007, the United States and Russia are to deploy no more than 3,000 to 3,500 strategic nuclear weapons each on ICBMs, sea-launched ballistic missiles (SLBMs), and heavy bombers. By December 31, 2003, the sides are to "deactivate" all strategic nuclear delivery vehicles to be eliminated by removing their reentry vehicles. In addition, both sides agreed to eliminate multiple warheads (MIRV) on land-based missiles, destroy all SS-18 heavy Russian missiles, and limit SLBMs to no more than 1,700 to 1,750. The Russian Duma ratified START II in April 2000.

START III. During the March 1997 summit meeting in Helsinki, Presidents Clinton and Yeltsin agreed on the basic elements of START III. The treaty, coterminous with START II, will reduce strategic warheads to no more than 2,000 to 2,500 each on ICBMs, SLBMs, and heavy bombers. The United States and Russia will negotiate measures relating to the transparency of warhead inventories and the destruction of strategic nuclear warheads. The two states will resolve issues related to the goal of making the current START treaties unlimited in duration.